Volunteer Lake Assessment Program Individual Lake Reports

CANOBIE LAKE, WINDHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,408	**Max. Depth (m):**	15.2	**Flushing Rate (yr^{1})**	0.3
Surface Area (Ac.):	373	**Mean Depth (m):**	5.5	**P Retention Coef:**	0.83
Shore Length (m):	8,400	**Volume (m^3):**	8,379,000	**Elevation (ft):**	219

TROPHIC CLASSIFICATION

Year	Trophic class
1987	MESOTROPHIC
2000	OLIGOTROPHIC

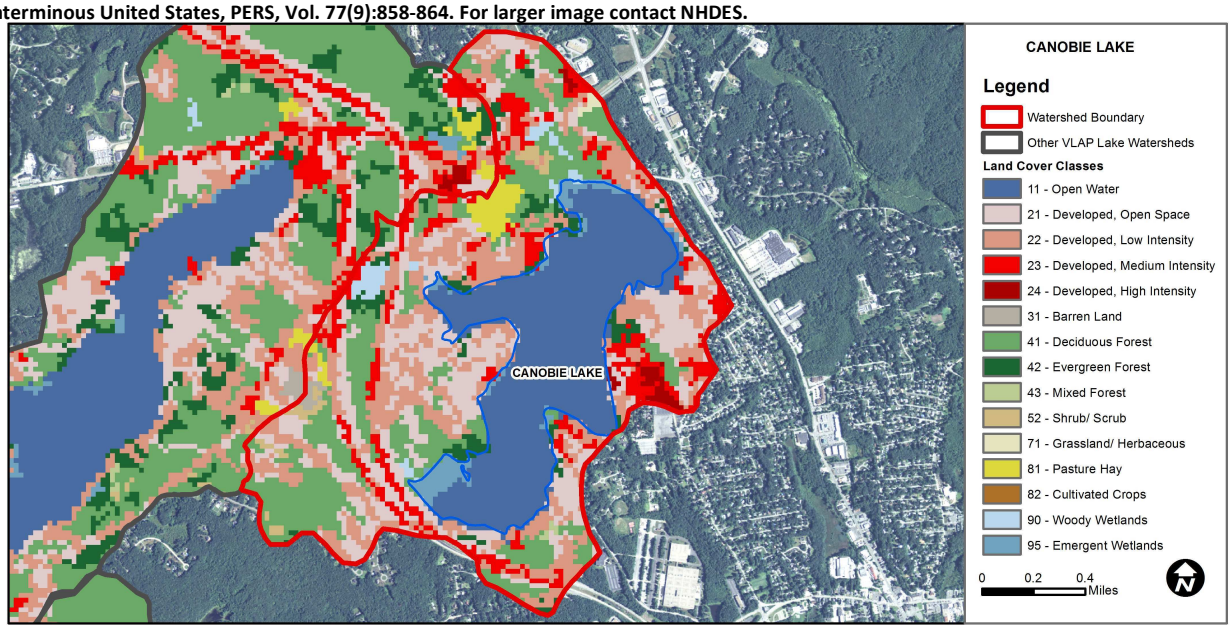
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.
	D.O. (mg/L)	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

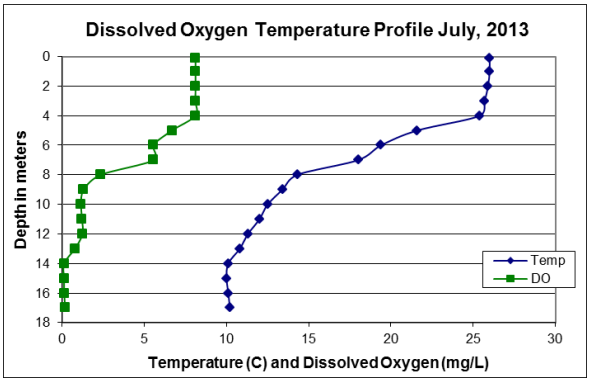


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	25.4	Barren Land	0.25	Grassland/Herbaceous	0.19
Developed-Open Space	18.1	Deciduous Forest	17.28	Pasture Hay	1.47
Developed-Low Intensity	19.3	Evergreen Forest	3.26	Cultivated Crops	0
Developed-Medium Intensity	8.36	Mixed Forest	0.11	Woody Wetlands	1.36
Developed-High Intensity	0.83	Shrub-Scrub	0.9	Emergent Wetlands	2.21

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
CANOBIE LAKE, WINDHAM, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in July and August and less than the state median. Historical trend analysis indicates significantly decreasing (improving) chlorophyll since monitoring began. We hope to see this continue!
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were elevated and much greater than the state medians. Historical trend analysis indicates stable epilimnetic conductivity with low variability between years.
- **E. COLI:** Inlet E. coli levels were very low in July and much less than state standard for surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly elevated in July and 2013 average level increased from 2012. Significant storm event occurred prior to the July sampling and may have contributed to the increased phosphorus. Historical trend analysis indicates stable eplimnetic phosphorus with low variability between years. Average phosphorus levels in the Metalimnion, Hypolimnion and Inlet also increased slightly in 2013.
- **TRANSPARENCY:** Transparency was good and much better than the state median. Historical trend analysis indicates stable transparency with low variability between years.
- **TURBIDITY:** Deep spot and Inlet turbidities were low on each sampling event.
- **PH:** Deep spot and tributary pH levels were sufficient to support aquatic life. Historical trend analysis indicates stable epilimnetic pH with low variability between years.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels decreased to less than 1.0 mg/L in the Hypolimnion. As decomposition of lake bottom material occurs, oxygen is utilized and typically depleted as the summer progresses. When oxygen levels decrease to below 1.0 mg/L the potential for phosphorus release from bottom sediments increases.
- **RECOMMENDED ACTIONS:** The NH DES Salt Reduction Coordinator is working with the Association to address elevated conductivity and chloride levels. Keep up the great work!



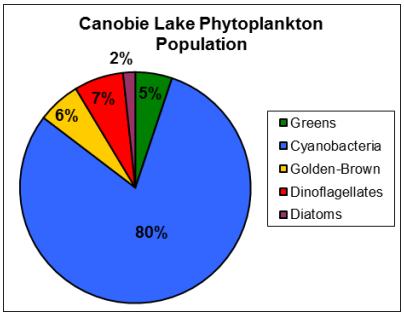


Table 1. 2013 Average Water Quality Data for CANOBIE LAKE

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	23.1	2.23	66	296.0		10	5.46	6.38	0.57	7.31
Metalimnion				303.0		12			0.45	6.66
Hypolimnion				306.0		14			0.98	6.59
Inlet			68	297.5	10	13			0.60	7.24

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Improving	Data significantly decreasing.
Conductivity	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.